

Biorational Pesticides Market Size & Share Analysis - Growth Trends and Forecast (2025 - 2030)

> **Industry:** Biologicals, Biopesticides & Crop Protection (Agriculture & Agribusiness)
> **Source:** <https://www.mordorintelligence.com/industry-reports/biorational-pesticides-market>
> **Scraped Date:** 2026-09-17

Executive Market Summary

Market Metric	Details
Base Market Size	USD 7.70 billion
Projected Forecast (2031)	USD 7.70 billion
Growth Rate (CAGR)	12.80 %
Largest Market Region	N/A
Fastest-Growing Region	N/A

Market Visualizations & Infographics

! [Major players in Biorational Pesticides industry] (images/chart_2.png)

! [Biorational Pesticides Market Size] (images/chart_3.png)

! [Biorational Pesticides Market Share by Ingredient, 2024] (images/chart_4.png)

! [Biorational Pesticides Market Share by Mode of Application, 2024] (images/chart_5.png)

! [Biorational Pesticides Market Growth Rate by Region] (images/chart_6.png)

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Comprehensive Research Analysis

Overview Points List Flex 49 Share Feature End

Market Overview

Study Period	2020 - 2030
Market Size (2025)	USD 7.70 Billion
Market Size (2030)	USD 14.10 Billion
Growth Rate (2025 - 2030)	12.80 %
Fastest Growing Market	South America
Largest Market	North America

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Market Overview

Biorational Pesticides Market Analysis by Mordor IntelligenceThe biorational pesticides market size is USD 7.7 billion in 2025 and is projected to reach USD 14.1 billion by 2030, growing at a CAGR of 12.8%. Stringent global residue regulations, expansion of organic farming acreage, and advancing bio-innovation pipelines drive this growth.[1]European Food Safety Authority, “Updated Peer Review of the Pesticide Risk Assessment of the Active Substance Spinosad,” EFSA Journal, ef sa.europa.euRegulatory changes, specifically the European Union's Farm to Fork strategy targeting a 50% reduction in synthetic pesticide use by 2030, are transforming crop protection approaches toward biological alternatives. The market development is further supported by venture capital investments that enable commercial scaling of RNA interference technologies and microbiome-based products. North America maintains its market leadership due to advanced agricultural infrastructure and efficient United States Environmental Protection Agency (EPA) registration processes, while South America demonstrates the highest growth potential through supportive regulatory frameworks and large-scale farming operations. The microbial ingredient segment dominates the market, with biochemical platforms showing rapid adoption rates due to advances in synthetic biology and peptide discovery that reduce development timelines. The market's fragmented nature increases merger and acquisition opportunities, particularly for specialized innovators who integrate proprietary active ingredients with digital agricultural decision-making tools.

Key Report Takeaways

- * By ingredient, the microbial segment dominated with 73% of the biorational pesticides market share in 2024, while biochemical products are projected to grow at 16.7% CAGR through 2030.
- * By product type, bioinsecticides generated 48% of market revenue in 2024, with bionematicides projected to achieve the highest growth rate at 19.1% CAGR through 2030.
- * By crop type, fruits and vegetables held 33% of the market size in 2024. The oilseeds and pulses segment is forecast to grow at 18.9% CAGR between 2025 and 2030.
- * By mode of application, foliar sprays dominated with 51% revenue share in 2024. Seed treatments are projected to grow at a 19.8% CAGR through 2030.
- * By formulation, liquid held the dominant position with a 58% revenue share in 2024. The dry formulation segment is anticipated to grow at a CAGR of 14.5% through 2030.
- * By geography, North America maintained market leadership with a 35% share in 2024, while South America is anticipated to grow at a 15.0% CAGR through 2030.
- * The market remains fragmented, with Valent BioSciences (Sumitomo Chemical Co., Ltd.), Bayer AG, Syngenta AG, BASF SE, and Certis Biologicals (Mitsui & Co., Ltd) collectively holding 34% market share in 2024.

Key Market Trends

Global Biorational Pesticides Market Trends and InsightsDrivers Impact Analysis*				
Driver	(~) % Impact on CAGR Forecast	Geographic Relevance	Impact Timeline	
Stringent global maximum residue limits and pesticide bans	+2.1%	Global; Europe and Japan at the forefront	Medium term (2–4 years)	
Rapid growth of organic acreage and premium food demand	+1.8%	North America		

and Europe; spreading to Asia-Pacific | Long term (≥ 4 years) |
Post-patent pipeline shift of majors toward bio-innovation | +1.5% | Global; Research and Development hubs in North America and Europe | Medium term (2–4 years) |
Venture-backed RNA-interference bio-actives reaching field scale | +1.2% | North America and Europe; pilot programs in Brazil | Short term (≤ 2 years) |
Soil-microbiome digital twins optimizing bio-pesticide efficacy | +0.9% | Advanced markets in North America, Europe and Australia | Medium term (2–4 years) |
Carbon-credit monetization for biological crop-protection practices | +0.8% | Global; early uptake in California, Europe and Australia | Long term (≥ 4 years) |
Source: Mordor Intelligence |

Competitive Landscape

Competitive Landscape

The industry remains fragmented, with the top five suppliers players including Valent BioSciences (Sumitomo Chemical Co., Ltd.), Bayer AG, Syngenta AG, BASF SE, and Certis Biologicals (Mitsui & Co., Ltd), holding a combined 34% market share in 2024. Valent BioSciences maintains the largest share through its proprietary fermentation facilities and extensive Bacillus product portfolio. Syngenta AG and Bayer AG maintain strong positions through their global distribution networks and multi-crop product registrations, while BASF SE and Certis Biologicals complete the top five manufacturers. This fragmentation creates opportunities for innovative companies, as demonstrated by AgroSpheres, which secured USD 37 million in Series B financing in late 2024 to advance its AgriCell encapsulation technology for improved biological persistence in field conditions.

The competitive landscape is evolving through strategic partnerships between established companies and emerging firms. Corteva's investment in Micropep provides access to peptide discovery libraries and streamlines product registration through shared data. ICL's 2025 acquisition of Lavie Bio demonstrates the integration of computational biology with formulation expertise, reflecting chemical companies' transition toward biological solutions.

Investment in biological crop protection remains robust, with over USD 500 million invested in ventures during 2024. Biobest secured USD 82.4 million in January 2025 to expand its global insectary operations, while Koppert Biological Systems obtained EUR 140 million (USD 151.2 million) to expand its bumblebee pollination and microbial products in Asia and South America. This capital influx enables specialized companies to expand manufacturing capabilities, manage regulatory requirements, and pursue strategic acquisitions to consolidate market position.

Biorational Pesticides Industry Leaders* Valent BioSciences (Sumitomo Chemical Co., Ltd.)

* Bayer AG

* Syngenta AG

* BASF SE

* Certis Biologicals (Mitsui & Co., Ltd)

* *Disclaimer: Major Players sorted in no particular order

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Component Component 3 Scope Of The Report Bottom

Global Biorational Pesticides Market Report ScopeBy IngredientMicrobial |
Botanical |
Biochemical and Semiochemical |

Segmentation Accordion Item

By GeographyNorth America | United States |

| Canada |

| Mexico |

| Rest of North America |

Europe | Germany |

| France |

| United Kingdom |

| Spain |

| Italy |

| Netherlands |

| Poland |

| Russia |

| Rest of Europe |

Asia-Pacific | China |

| India |

| Japan |

| Australia |

| South Korea |

| Indonesia |

| Thailand |

| Vietnam |

| Rest of Asia-Pacific |

South America | Brazil |

| Argentina |

| Chile |

| Peru |

| Colombia |

| Rest of South America |

Middle East | Turkey |

| Saudi Arabia |

| United Arab Emirates |

| Israel |

| Iran |

| Rest of Middle East |

Africa | South Africa |

| Kenya |

| Nigeria |

| Egypt |

| Morocco |

| Rest of Africa |

Frequently Asked Questions

What is the current biorational pesticides market size?

The biorational pesticides market size is USD 7.7 billion in 2025 and is projected to reach USD 14.1 billion by 2030.

Which ingredient type leads the biorational pesticides market?

Microbial products hold 73% of 2024 revenue, reflecting mature regulatory pathways and broad crop adoption.

Which region is growing fastest in the biorational pesticides market?

South America is projected to post the quickest 15.0% CAGR through 2030, led by Brazil's supportive regulatory environment.

Why are seed treatments gaining traction in biological crop protection?

Seed treatments deliver precise doses, shield microbes during planting and are forecast to grow at a 19.8% CAGR through 2030.

How fragmented is the competitive landscape?

The top five players capture only 34% share, indicating ample room for consolidation and start-up disruption.

What role do carbon credits play in adoption?

Emerging carbon markets can add USD 15–30 per ha in revenue, improving biological paybacks by up to 35% and encouraging wider use.